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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
AMRANY, ADI	
ART UNIT	**PAPER NUMBER**
2836	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/788,962	LASALANDRA ET AL.	
	Examiner	Art Unit	
	Adi Amrany	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed November 13, 2006, have been fully considered but they are not persuasive.

Regarding claim 1, Blank discloses that the acceleration sensors (32, 33) are compared to three threshold levels (LEV1-3; column 6, lines 23-38) to determine the intensity of the acceleration event. Blank states that the evaluator (34) incorporates signals from *multiple* sensors, including: the impact sensor (1), longitudinal acceleration sensor (32), transverse acceleration sensor (33), and occupant sensor (35) (column 5, lines 30-42). Although only the impact sensor (1) and longitudinal sensor (32) are discussed in detail, it is inherent that all of the Blank sensors would operate in the same manner to supply consistent signals to the evaluator (34), in order to correctly activate the vehicle airbags.

Regarding applicants' arguments in claim 4, the non-final rejection (July 11, 2006) stated that the threshold levels of the two acceleration sensors (32,33) are equal to each other.

With respect to claim 9, Blank discloses an apparatus that wakes itself up upon detection of an acceleration event. Claim 9 recites a portable electronic apparatus. As this is a broad preamble, one skilled in the automotive art would interpret stand-by in a different light. Sensitive devices, such as automotive airbag inflators, are tested/activated before they are installed.

Regarding claim 10, Blank uses multiple sensors to determine the acceleration event. Blank discloses an example using only two sensors (1 and 32), however, other situations requiring all four sensors is inherent. The disclosure of both (two), or all four, sensors clearly anticipates the limitation of *at least one*.

Regarding claim 13, Blank discloses two sensors (32, 33) that operate along different axes.

Regarding claim 14, the Blank impact sensor (1) is a separate and independent device from the central acceleration sensors (32, 33). While the outputs may be combined to calculate the severity of an acceleration event, it is clear that a sensor (32 or 33) is configured to operate in each of the axes. There is no item corresponding impact sensor in the current application.

Regarding claim 21, Blank discloses that the sensor output is determined by the magnitude and direction of acceleration. A head on crash would result in sensor (32) exceeding the high threshold (LEV3), while the sensor (33) would not (0 or LEV1). Blank anticipates the limitations of claim 21, because it discloses at least four sensors comparing acceleration axes against multiple threshold levels.

Regarding claims 5 and 12, the Blank sensors (32, 33) detect acceleration in perpendicular axes. Regardless, the claims are drawn to the threshold level ratio for one sensor.

The remaining dependent claims remain rejected as stated in the non-final rejection, as applicants did not challenge the use or motivation for combining the secondary references (Oguchi and Ishiyama).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 9-11, 13-14, 17-18 and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Blank (US 6,274,948).

With respect to claim 1, Blank discloses a multidirectional inertial device having a plurality of preferential detection axes (figures 1, 3; column 4, lines 29-36), comprising:

inertial sensor means (figure 1, item 3; column 4, lines 29-31), which are sensitive to accelerations parallel to said preferential detection axes;

transduction means (figure 3, items 32-33; column 5, lines 36-38);

first comparison means (figure 3, item 34; column 5, lines 42-50), supplying a pre-determined logic value when at least one of said acceleration signals is greater than a respective upper threshold; and

second comparison means (column 6, lines 23-52), for supplying said pre-determined logic value when each of said acceleration signals is greater than a respective lower threshold.

With respect to claim 4, Blank further discloses said upper thresholds are equal to one another and said lower thresholds are equal to one another (figure 5; column 6,

lines 23-52). Blank discloses that the signals derived from *each* axis (32,33) are compared to equal threshold levels to produce outputs LEV1, LEV2 or LEV3.

With respect to claim 9, Blank discloses a portable electronic apparatus (figure 1, item 3); comprising a device for reactivation from stand-by (figure 1, item 5; column 4, lines 39-44). Blank further discloses said device includes a multidirectional inertial device that includes: inertial sensor means, transduction means, first comparison means, and second comparison means, as discussed above in the rejection of claim 1.

With respect to claims 10-11, Blank discloses the apparatus necessary to complete the recite method, as discussed above in the rejection of claims 1-2, respectively.

With respect to claim 13, Blank discloses a device, comprising:

an acceleration circuit (figure 3, item 3; column 4, lines 31-36) configured to produce a dynamic acceleration signal corresponding to a level of acceleration in each of a plurality of detection axes (figure 3, items 32-33);

a comparator circuit (figure 3, item 34; column 5, lines 36-38 and 42-50) for each of the detection axes, configured to compare the respective dynamic acceleration signal with respective higher and lower threshold signals; and

a logic circuit (figure 3, item 34; figure 5; column 6, line 17 to column 7, line 22) configured to produce a selected logic value at an output if the dynamic acceleration signal of any of the plurality of detection axes exceeds its respective higher threshold, or if the dynamic acceleration signals of any two of the plurality of detection axes exceeds their respective lower thresholds.

With respect to claims 14 and 17, Blank further discloses the acceleration circuit comprises:

a sensor (figure 3, item 3; column 4, lines 31-36) configured to sense acceleration in each of the detection axes; and

a transduction circuit (figure 3, items 32-33; column 5, lines 36-38).

As noted in the non-final rejection, the only difference between dependent claims 14 and 17 is the recitation of receiving signals "sequentially." It is inherent that the Blank evaluator (34), which comprises a central processing unit, would calculate the code signals (LEVx) *sequentially* as processors only complete one computation at a time.

With respect to claim 18 and 22-24, Blank further discloses two detection axes at right angles to each other, mutually orthogonal, and perpendicular to each other (figure 3, items 32-33; column 4,lines 31-36).

With respect to claim 21, Blank discloses the apparatus necessary to complete the recite method, as discussed above in the rejection of claim 13.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-3, 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blank.

With respect to claim 2, Blank discloses the device according to claim 1, but does not expressly disclose said first comparator means comprise, for each said preferential detection axis, a respective first comparator, which receives the respective one of said upper thresholds and receives the respective one of said acceleration signals, and at least one first logic gate, connected to each first comparator.

It would have been obvious to a person of ordinary skill in the art that the Blank first comparison means comprises a comparator. Blank discloses that the acceleration signal is compared against a first threshold level (figure 4, G1; column 5, line 66 to column 6, line 16) to determine an acceleration code signal (figure 5, LEV1). The code signal is then output to a triggering strategy (figure 5, column 6, lines 23-52).

Further, it would be obvious to one of ordinary skill that the triggering strategy may be implemented with at least one logic gate. Logic gates are well known in the art for calculating truth tables, such as the matrix presented by Blank in figure 5, to determine which one of the acceleration events is taking place.

With respect to claim 3, Blank discloses the device according to claim 2, but does not expressly disclose said second comparison means comprise, for each of said preferential detection axes, a respective second comparator, which *receives* one of said lower thresholds and receives the respective one of said acceleration signals, and at least one second logic gate, connected to each second comparator.

It would have been obvious to a person of ordinary skill in the art that the Blank second comparison means comprises a comparator and at least one logic gate. Blank discloses that the acceleration signal is compared against *multiple* threshold levels (figure 4, G1-G6) to determine the different acceleration code signals (LEV1-LEV3). The code signals are then output to a triggering strategy, which comprises at least one logic gate, as discussed above.

With respect to claims 5 and 12, Blank discloses the device according to claims 1 and 10, but does not expressly discloses the ratio between the upper threshold and the lower threshold is substantially equal to $1/\sqrt{2}$. At the time of the invention by applicants, it would have been obvious to one of ordinary skill in the art to set the ratio between the upper and lower thresholds at $1/\sqrt{2}$, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617, F.2d. 272, 205 USPQ 215 (CCPA 1980).

6. Claims 6-7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blank, in view of Oguchi (US 2002/0033047).

With respect to claim 6, Blank discloses the device according to claim 1, but does not expressly disclose said inertial sensor means comprise at least one micro-electro-mechanical sensor with capacitive unbalancing.

Oguchi discloses an acceleration sensor comprising a micro-electromechanical sensor with capacitive unbalancing (figure 2; paragraphs 41-42).

Blank and Oguchi are analogous because they are from the same field of endeavor, namely acceleration force sensors. At the time of the invention by applicants,

it would have been obvious to a person of ordinary skill in the art to combine the multidirectional inertial device disclosed in Blank with the micro-electromechanical sensor with capacitive unbalancing disclosed in Oguchi, in order to use a force sensor with a moveable portion that naturally returns to its original position and can continually operate without constant recalibration.

With respect to claim 7, Blank further discloses using an inertial sensor means for each of said preferential axes (figure 3, items 32-33; column 4, lines 31-36) and Oguchi discloses that the inertial sensor means comprise micro-electromechanical capacitive unbalancing sensors.

With respect to claim 16, Blank further discloses a sensor for each of the plurality of detection axes (figure 3, items 32-33; column 4, lines 31-36) and Oguchi discloses the sensor comprises a micro-electromechanical capacitive-unbalance sensor (figure 2; paragraphs 41-42). Blank and Oguchi are analogous as discussed above.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blank, in view of Oguchi, and in further view of Ishiyama (US 6,738,214).

Blank and Oguchi disclose the device according to claim 6, but do not expressly disclose the at least one current-to-voltage converter, a subtractor node having inverting and non-inverting inputs, a filter and a rectifier.

Ishiyama discloses an acceleration force sensor (figure 3, item 19; column 4, lines 7-20) with a transduction means (figure 3, item 24; column, lines 39-51) comprising a filter (column 5, lines 5-31).

The remaining elements of claim 8 are inherent or obvious in view of Ishiyama as discussed below:

The sensors of Blank, Oguchi and Ishiyama comprise voltage outputs and the Ishiyama filter requires a voltage input. Therefor, it is unnecessary to include a current-to-voltage converter. It would have been obvious to a person of ordinary skill in the art to include a current-to-voltage converter for sensors that output a current value.

Ishiyama discloses both high-pass and a low-pass filters. Ishiyama utilizes the high-pass filter to extract the dynamic acceleration components (falling), while the low-pass filter is used to extract the static acceleration components (gravity) (column 5, lines 5-31). It would have been obvious to a person of ordinary skill in the art that the output of a high-pass filter is equivalent to subtracting the output of a low-pass filter from the original signal.

Finally, the Ishiyama sensor outputs a digital voltage signal (column 4, lines 11-15), the filters extract the acceleration components and output a digital frequency signal to a central processing unit (column 5, lines 41-44). The digital signal processing disclosed in Ishiyama does not require a rectifier. It would have been obvious to a person of ordinary skill in the art that an analog sensor system would require passing the signal through a rectifier before the signal is input to a processor or logic gate.

Blank, Oguchi and Ishiyama are analogous because they are from the same field of endeavor, namely acceleration force sensors. At the time of the invention by applicants, it would have been obvious to a person of ordinary skill in the art to combine the multidirectional inertial device disclosed in Blank and Oguchi with the transduction

means disclosed in Ishiyama, in order to extract the dynamic and/or static acceleration components of the force sensor output signal.

8. Claims 15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blank, in view of Ishiyama.

With respect to claim 15, Blank does not expressly disclose each of the transduction circuits is configured to subtract, from the respective acceleration value, a respective static acceleration value, thereby producing the respective dynamic acceleration signal.

Ishiyama discloses utilizing a high-pass filter to extract the dynamic acceleration signal (column 5, lines 5-31). As discussed in the rejection of claim 8, it would have been obvious that a high-pass filter output is equivalent to subtracting a low-pass filter output from the original signal. Blank and Ishiyama are analogous, as discussed above.

With respect to claims 19-20, Blank discloses the device of claim 13. Ishiyama discloses the device further comprises a portable computer (column 3, line 11 to column 4, line 6). The Ishiyama acceleration sensor detects when the device is falling and shuts off sensitive internal components. Further, it would have been obvious to a person of ordinary skill in the art that to combine the device with a cell phone. The motivation for doing so would have been because a cell phone is small portable electronic device that may be dropped and is subjected to internal component damage, similar to a portable computer.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

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